PROCEEDINGS
OF THE
CALIFORNIA ACADEMY OF SCIENCES
FOURTH SERIES

Vol. XXXVI, No. 5, pp. 93–124; 45 figs. September 30, 1968

NEW THYSANOPTERA FROM AUSTRALIA

By

Dudley Moulton[1]

Introduction

The seven new genera and twenty new species of Thysanoptera described in this paper are from specimens sent to the author many years ago by the late Mr. W. W. Froggatt and others and in each case due credit has been given to the collector. The author wishes to express his deep gratitude to each of these men for their interest and cooperation. All types are deposited with the Department of Entomology of the California Academy of Sciences in San Francisco.

Suborder TUBULIFERA Haliday, 1836
Superfamily PHLAEOTHRIPOIDEA Hood, 1915
Family Phlaeothripidae Uzel, 1895
Subfamily Phlaeothripinae Karny, 1921
Tribe Hoplothripini Priesner, 1926

Smerinthothrips fuscipennis Moulton, new species.

Holotype female. Color dark brown including legs, with fore tibiae and tarsi brown; antennae mostly dark, with segment 3 yellowish in basal half, 4 in basal fourth and 5 at extreme base; forewings light brown, darker at base; prominent setae clear yellow.

Head 0.2 times longer than wide, with straight, nearly parallel cheeks which are without conspicuous genal setae; the raised ocellar area reticulate, back of head with transverse lineation; postocular setae as long as eyes, with blunt tips; eyes, antennae and mouthcone normal for the genus; third antennal segment with one sensecone. Pronotum with all normal, blunt-tipped setae; fore femora

[1] Mr. Moulton died on July 5, 1951.

enlarged, each fore tarsus with tooth; forewings with 18 or 19 double fringes. Abdomen normal, terga 2 to 7 each with two pairs of sigmoid setae; tube approximately 0.9 times as long as head, slightly swollen at base, not constricted before the end.

Total length 3.0 mm.; head length 0.279 mm., width 0.235 mm.; tube length 0.259 mm.; length of setae: postoculars 100, on anterior margin of pronotum 63, anterior angles 96, midlaterals 83, outer on posterior angles 120, inner 133 microns. Antennal segments length (width): II, 60 (36); III, 83 (36); IV, 76 (43); V, 73 (40); VI, 66 (33); VII, 60; VIII, 36 microns, total 0.485 mm.

Type material and locality. Holotype female and two female paratypes, Port Lincoln, South Australia (A. M. Lea), (Moulton no. 3145).

Remarks. The genotype, *S. tropicus* Schmutz, may be separated by its lighter colored intermediate antennal segments and wings; *S. umbratus* Hood has unarmed fore tarsi and pointed body setae; *S. nigripes* Karny has unarmed fore tarsi, a lesser number of double fringe hairs on forewings and much longer sensecones on third and fourth antennal segments.

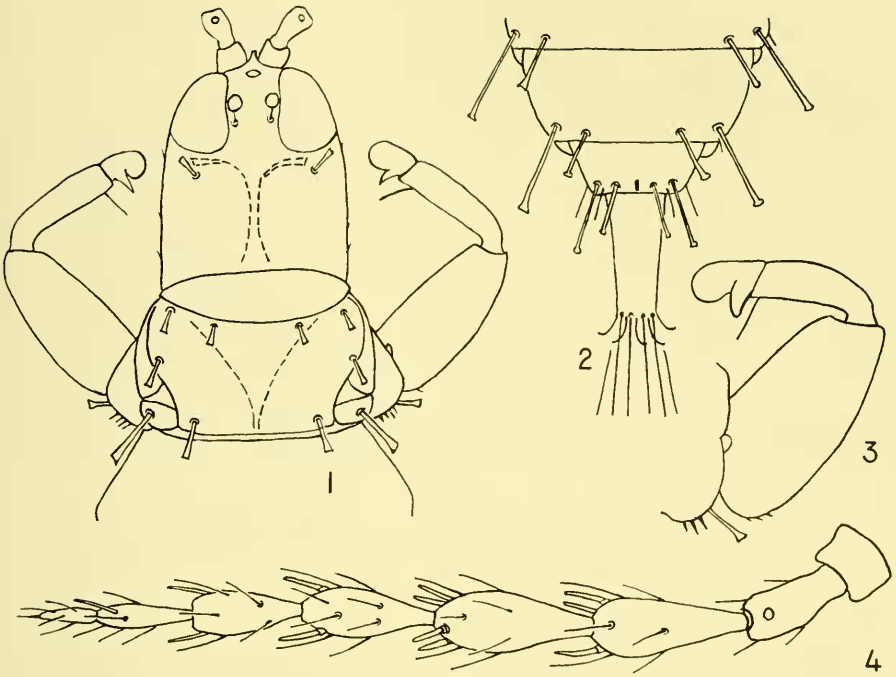
Poecilothrips fuscus Moulton, new species.
(Figures 1, 2, 3, 4.)

Holotype female. Color deep brown with bases of antennal segments 3 to 6 brownish yellow, all tarsi brown, body with much red pigment, wings clear.

Head approximately 0.15 longer than wide, evenly rounded in front, somewhat wider behind the eyes, dorsum with fine, transverse lineation, cheeks nearly smooth, with two or three small genal setae; postoculars short, like other major setae, with widely dilated tips; eyes large, their width equal to the interval between them; ocelli small, anterior in position; mouthcone pointed, extending to posterior margin of prosternum; third antennal segment with 3, fourth with 4 sensecones, each of these with a distinct constriction at base which gives it the appearance of being 2-segmented, the basal portion very small; in other respects the antennae are typical of the genus.

Prothorax 0.5 times as long as wide, pronotum without median dorsal thickening; legs slender, each fore tarsus with a sharp tooth; wings slender, of even width, fore pair with 16 double fringes. Abdomen moderately stout, lateral setae short, with dilated tips; two pairs of sigmoid setae on terga 2 to 7; setae on ninth segment similar to the others but longer; terminal hairs nearly as long as tube, with pointed tips, the minor setae at their bases curved.

Total length 2.1 mm.; head length 0.323 mm., width 0.279 mm.; prothorax length 0.176 mm., width without coxae 0.382 mm.; pterothorax width 0.500 mm.; abdomen width 0.500 mm.; tube length 0.191 mm., width at base 0.088 mm., 0.6 times as long as head. Antennal segments length (width), II, 60 (33); III, 86 (40); IV, 96 (43); V, 80 (36); VI, 60 (30); VII, 50; VIII, 33 microns; total length 0.514 mm., 0.6 longer than head; width of fore femora in females, 0.117 mm., in males, 0.176 mm.



FIGURES 1–4. *Poecilothrips fuscus*, new species. Figure 1, head and prothorax, holotype female; figure 2, tip of abdomen, holotype female; figure 3, right fore leg, allotype male; figure 4, right antenna, holotype female.

ALLOTYPE MALE. Similar to female in color; postoculars longer, extending beyond sides of head, pronotum with a median dorsal thickening, fore femora enlarged, fore tarsal tooth stronger, forewings with 18 double fringe hairs.

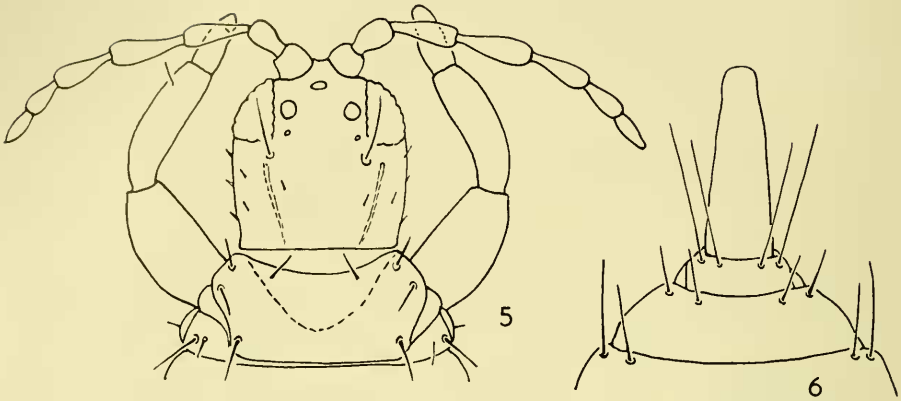
TYPE MATERIAL AND LOCALITY. Holotype female, allotype male, Perth, Western Australia, 18 June 1933 (B. A. O'Connor), taken from pieces of wood lying in grass (Moulton no. 5560).

REMARKS. The armed fore tarsus in the female separates this species from other known members of the genus.

Gastrothrips australiensis Moulton, new species.
(Figures 5, 6.)

HOLOTYPE FEMALE. Color almost black, third antennal segment with a light spot at base, wings washed with brown, darkened at bases.

Head slightly longer than wide, cheeks weakly arched and narrowed only slightly at base of head; postoculars placed rather closely behind eyes, with blunt to almost pointed tips; genal setae short, black; eyes moderately small, angular within; posterior ocelli widely separated, approximate to anterior inner margins



FIGURES 5, 6. *Gastrothrips australiensis*, new species, holotype female. Figure 5, head and prothorax; figure 6, tip of abdomen (terminal setae omitted).

of eyes; third antennal segment at least 3.0 times longer than its greatest width, with two sensecones; fourth segment normal, with four sensecones; segment 8 semi-pediculate, clearly separated from 7; mouthcone broadly rounded, extending over 0.8 the length of prosternum.

Prothorax 3.5 times wider than its median dorsal length which in turn is 0.5 times as long as head, fore margin deeply concave, with normal setae, those on posterior angles longest, with nearly pointed tips and blackish brown in color; sutures complete; fore femora moderately enlarged, fore tarsi unarmed; wings just noticeably narrowed at middle, fore pair with 20 double fringes. Abdomen wider than pterothorax, apical setae long, light brown; tube approximately as long as head, its sides almost straight, weakly reduced at tip.

Total body length 1.85 mm.; head length 0.294 mm., width 0.262 mm.; prothorax length 0.132 mm., width including coxae 0.470 mm.; pterothorax width 0.485 mm., tube length 0.294 mm., width at base 0.102 mm. Antennal segments length (width): II, 66 (33); III, 103 (33); IV, 96 (40); V, 83 (36); VI, 56 (36); VII, 46 (30); VIII, 43 microns; total length 0.526 mm.

TYPE MATERIAL AND LOCALITY. Holotype female, Pearson Island, South Australia (Campbell), (Moulton no. 3137).

REMARKS. This is a true *Gastrothrips* and the first to be recorded from Australia. It belongs with those in the genus which have two sensecones on antennal segment 3 and 4 on segment 4. It is most closely related to *G. nigrisetis* Hood and *G. parvidens* Hood, both from Canal Zone, Panama. The dark colored third antennal segment, with only a light spot at extreme base, separates it from *G. nigrisetis*. It agrees with *G. parvidens* in having a non-thickened anterior pronotal margin, nearly black legs and yellowish brown abdominal setae, but the third antennal segment in *G. parvidens* is yellow in the basal third. The unarmed fore tarsi separates it from both of these species.

Rhynchothrips fuscipennis Moulton, new species.
(Figure 7.)

HOLOTYPE FEMALE. Head and thorax brownish black, abdomen black, antennae and legs nearly black with third antennal segment brownish yellow in basal half, brown apically; tips of fore tibiae, and fore tarsi yellowish brown; forewings uniformly light brown; prominent setae clear.

Head wider than long, rounded in front, cheeks weakly arched, roughened; with rather strong reticulate-striate sculpturing on dorsal surface; postocular setae short, with dilated tips; antennae normal for the genus, segment 3 with one sensecone, segments 7 and 8 joined as a unit; eyes normal, anterior ocellus on rounded forehead and directed forwards, posterior ocelli widely separated; mouthcone drawn out, pointed, extending across prosternum.

Prothorax strong, longer than head, with normal, short setae, these with dilated tips, without median dorsal thickening; fore legs enlarged, fore tarsus with a sharp tooth; forewings normal, of even width, apparently without double fringes. Abdomen stout, lateral setae clear; tube as long as head, noticeably constricted in apical fourth.

Total length 1.82 mm.; head length 0.235 mm., width 0.264 mm.; prothorax

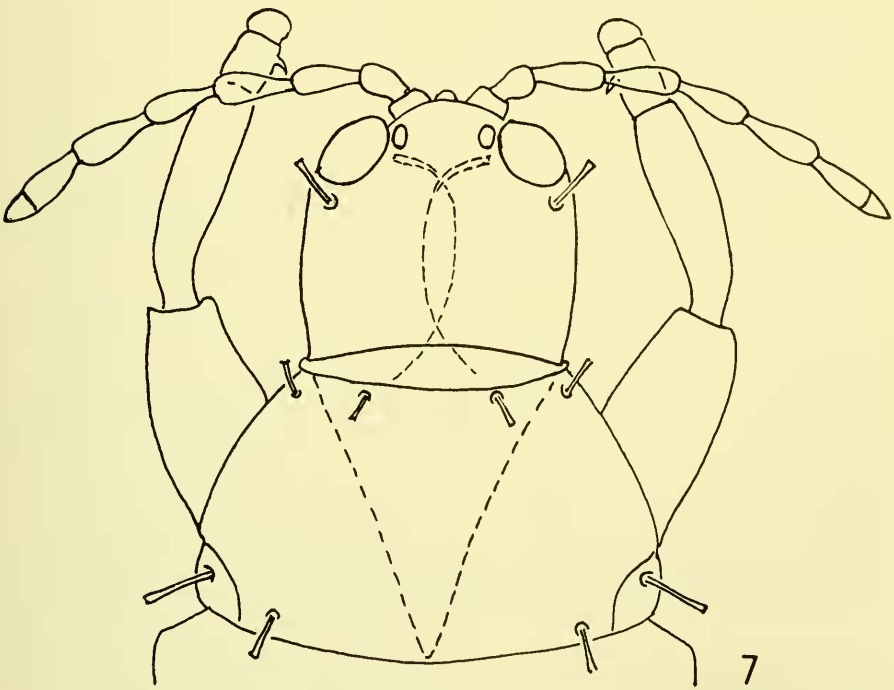


FIGURE 7. *Rhynchothrips fuscipennis*, new species, holotype female. Head and prothorax.

length 0.259 mm., width 0.411 mm.; pterothorax width 0.543 mm.; abdomen width 0.573 mm.; tube length 0.235 mm., width at base 0.088 mm. Antennal segments length (width): III, 73 (30); IV, 80 (33); V, 73 (30); VI, 66 (30); VII, 66; VIII, 33 microns; total 0.44 mm.; length of setae: postoculars 53, on anterior angles of prothorax 33, on posterior angles, outer 63, inner 40 microns.

Allotype male. Like female but with stronger forelegs and a stronger tarsal tooth, with a median dorsal thickening on prothorax and longer setae.

Type material and locality. Holotype female, allotype male, and two female paratypes, Canberra, A. C. T., 14 January 1927 (W. W. Froggatt), (Moulton no. 1703).

Remarks. This species may be separated from *R. annulosus* Priesner by its shorter head, darker colored antennae and armed fore tarsi, and from *R. soror* Hood by the darkened wings.

Genus **Teuchothrips** Hood

Synopsis of Australian Species[2]

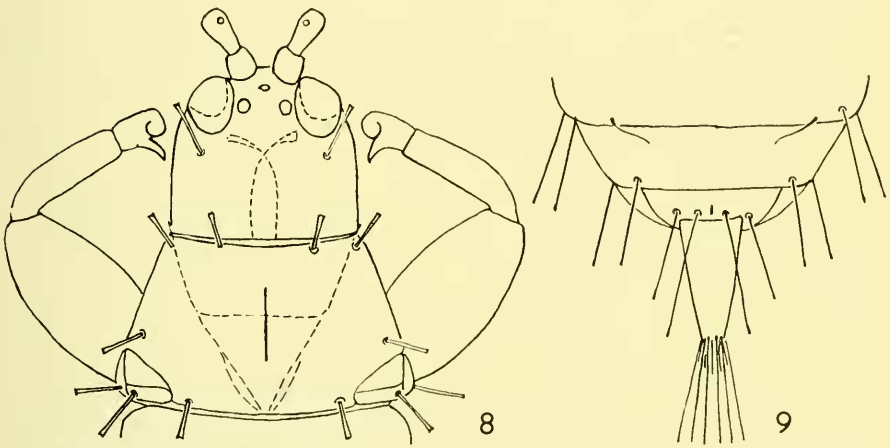
1. Forewings with a double fringe of hair 4
   Forewings without a double fringe of hair 2
2. Wings clear ..... *T. minor* Bagnall
   Wings colored brown 3
3. Tube as long as head, or longer ..... *T. simplicipennis* Hood
   Tube 0.75 times as long as head ..... *T. insolens* Bagnall
4. Forewings with seven to nine double fringe hairs 5
   Forewings with ten or more double fringe hairs 8
5. Head wider than long ..... *T. brevidens* Hood
   Head 0.2 times longer than wide 6
6. Antennal segments seven and eight not compactly joined ..... *T. disjunctus* Hood
   Antennal segments seven and eight compactly joined as a single unit 7
7. Postocular setae longer than eyes ..... *T. connatus* Hood
   Postocular setae shorter than length of eyes ..... *T. sodalis* Bagnall
8. Wings shaded at middle, or darkened at base 9
   Wings clear, or colored brown 11
9. Larger species, length 2.3 to 2.5 mm. ..... *T. pittosporiicola* Bagnall
   Smaller species, length 1.7 to 1.8 mm. 10
10. Head 0.25 times longer than wide, forewings weakly colored in median third, with 10 to 13 double fringe hairs ..... *T. bursariicola* Priesner
    Head as wide as long, forewings light brown in basal half, with 17 double fringe hairs ..... *T. spinosa*, new species
11. Wings clear 12
    Wings colored brown 13
12. Sixth antennal segment yellowish at base, forewings with 14 double fringe hairs ..... *T. gracilior* Hood
    Sixth antennal segment brown, forewings with 17 to 18 double fringe hairs ..... *T. albipennis*, new species

[2] *T. froggatti* Bagnall is not included because the presence or absence of a double fringe of hairs on the forewings is not known.

13. Head 0.2 times longer than wide, antero-marginal setae on prothorax short, pointed ..... *T. badiipennis* Hood
Head wider than long, antero-marginal setae on prothorax stout, with dilated tips ..... *T. fuscipennis*, new species

Teuchothrips albipennis Moulton, new species.
(Figures 8, 9.)

Holotype female. Color nearly black including legs, except fore tibiae which are yellowish brown, blackened on the margins, middle and hind tibiae which are lighter at both ends and tarsi which are yellowish brown, darkened on outer margins; antennal segments 1 and 2 blackish brown with 2 lighter apically, 3 brownish yellow in basal half shading to dark brown in apical third, 4 and 5 brown in basal third shading to blackish brown in apical half, 6 to 8 nearly black; wings and all prominent setae clear.



Figures 8, 9. *Teuchothrips albipennis*, new species, holotype female. Figure 8, head and thorax; figure 9, tip of abdomen.

Head as wide as long, cheeks converging to eyes, nearly parallel posteriorly, dorsal surface transversely reticulate; postoculars placed well back from middle of eyes with dilated tips; eyes subovate, longer and wider on dorsal than on ventral surface; posterior ocelli placed opposite middle of eyes; antennal segment 2 noticeably slender, 2.0 times longer than wide, 3 nearly 3.0 times longer than wide, 5 and 6 obliquely truncate at apical ends being longer on inner margins, 7 and 8 joined as a unit; segment 3 with one sensecone; posterior ventral surface of head prolonged and extending over approximately 0.3 the length of prosternum; mouthcone triangular, with nearly straight sides, narrowed to a point and reaching posterior margin of prosternum.

Prothorax 0.8 times as long as head, anterior and lateral margins nearly straight, the latter expanding posteriorly, posterior margin weakly convex; with

all normal setae, these approximately subequal and with dilated tips; sculpturing more indistinct than on head, median thickening weak and incomplete; fore femora enlarged, each fore tarsus with a strong tooth; wings broad, fore pair with 17 double fringes. Abdomen normal, lateral setae rather long, with dilated tips, those on segment 9 as long as tube; tube 0.66 as long as head, with straight sides.

Total length with abdomen somewhat contracted 1.71 mm.; head length and width 0.264 mm.; prothorax length 0.205 mm., width 0.411 mm.; pterothorax width 0.411 mm.; abdomen width 0.573 mm.; tube length 0.176 mm. Antennal segments length (width): II, 66 (33); III, 96 (33); IV, 90 (33); V, 76 (33); VI, 63 (30); VII, 50; VIII, 30 microns; total 0.47 mm. Length of setae: postoculars 83, on posterior angles of pronotum 73, others 58, on ninth abdominal segment 132, at tip of tube 176 microns.

Allotype male. Similar to female, but with larger fore femora and a strong tarsal tooth.

Type material and localities. Holotype female, allotype male, and one paratype male, Ivanhoe, New South Wales, 16 May 1931 (S. E. Flanders), taken on *Casuarina* species (Moulton nos. 4712, 4709); four female paratypes, Tarcoola (A. M. Lea), (Moulton no. 3082); and 2 female paratypes, Barton, South Australia (A. M. Lea), (Moulton no. 3115).

Remarks. This species is very close to *T. gracilior* Hood but separated by the shorter second and longer third antennal segments, darker color of segments 5 and 6, the pointed mouthcone and the greater number of double fringes on forewings.

Teuchothrips fuscipennis Moulton, new species.
(Figures 10, 12.)

Holotype female. Color blackish brown, end of abdomen and tube black; legs nearly black, only fore tarsi brown; antennal segments 3 to 5 mostly brownish yellow, 3 darkened apically, 4 more so, 5 in apical half, 6 lighter only at base, otherwise nearly black; forewings brown with a darker median streak, lower wings nearly clear but with a darkened median line; setae on head, thorax, and abdominal segments 2 to 6 nearly black, those on segments 7 to 9 clear yellow, terminal hairs darkened at bases.

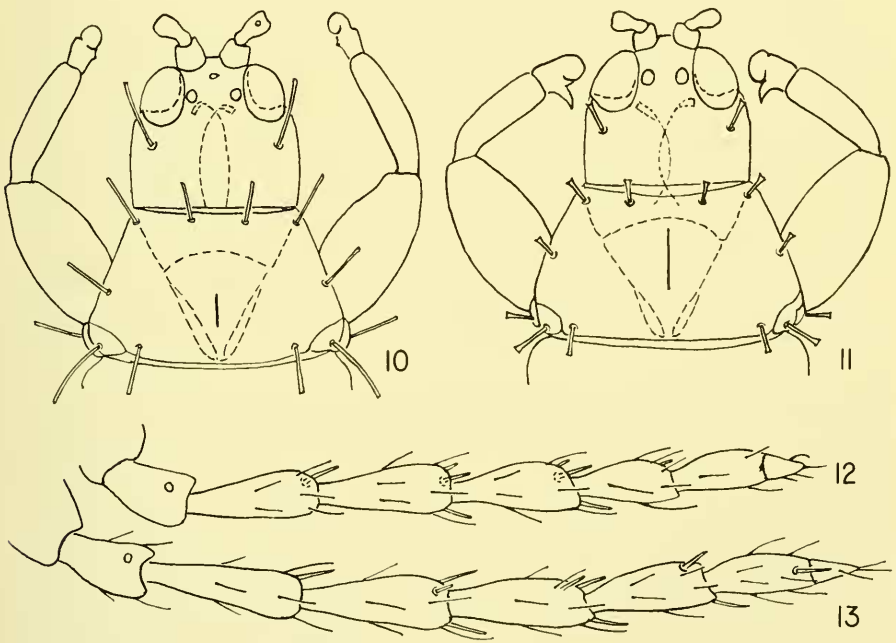
Head only slightly wider than long, cheeks converging to eyes, otherwise nearly straight, diverging slightly posteriorly; dorsal surface transversely reticulate, cheeks roughened, with a few minute setae set on small warts; postoculars longer than length of eyes, extending beyond side margins of head, with blunt tips; eyes large subovate, longer and wider on dorsal than ventral surface; posterior ocelli approximate to middle inner margins of eyes; posterior ventral portion of head extending over 0.25 the length of prosternum; mouthcone triangular, labrum narrowed to a point, labium rounded; antennae normal for the genus, segment 3 with one sensecone, 5 and 6 obliquely truncate apically, 7 and 8 closely but not compactly joined.

Prothorax with nearly straight anterior and lateral margins, not greatly widened posteriorly, pronotum almost smooth, with weak reticulation at the sides; all setae strong, nearly subequal, with blunt tips; fore femora enlarged, each fore tarsus with a very small tooth, barely apparent in some specimens; forewings with 16 double fringes. Abdomen normal, lateral setae long and strong, with blunt tips, those on segment 9 nearly as long as tube; tube 0.66 times as long as head, with straight sides, terminal hairs as long as tube.

Total length 2.27 mm.; head length 0.264 mm., width 0.294 mm.; prothorax length 0.220 mm., width 0.396 mm.; tube length 0.22 mm.; antennal segments length (width): II, 66 (36); III, 100 (33); IV, 86 (36); V, 83 (36); VI, 103 (33); VII, VIII together 103 microns; total length 0.558 mm. Length of setae: postoculars 103, on anterior margin of prothorax 73, anterior angles 103, mid-laterals 86, on posterior angles 106, on fore coxae 83 microns.

TYPE MATERIAL AND LOCALITIES. Holotype female, Liverpool, New South Wales (A. M. Lea), (Moulton no. 3457); three female paratypes, Bribie Island, Moreton Bay, Queensland (A. M. Lea and Hacker), (Moulton no. 3141).

REMARKS. This species is separated from *T. badiipennis* Hood by the long, nearly subequal setae on head and prothorax, the minute tarsal tooth and more numerous double fringe hairs on forewings, 16 as compared with 11.



FIGURES 10–13. Figures 10, 12. *Teuchothrips fuscipennis*, new species, holotype female; figure 10, head and prothorax; figure 12, right antenna. Figures 11, 13. *Teuchothrips spinosus*, new species, holotype female; figure 11, head and prothorax; figure 13, left antenna.

Teuchothrips spinosus Moulton, new species.
(Figures 11, 13.)

Holotype female. Color blackish brown with apical half of abdomen black; fore tibiae dark brown, lighter apically, tarsi brown; antennal segments: 3 brownish yellow, darker in apical third, 4 and 5 brownish yellow in basal third, otherwise blackish brown, 6 lighter only at extreme base, others nearly black; forewings washed with brown in basal half, distal half and lower wings clear; major setae blackish brown except at extreme expanded tips where they are almost clear, lateral setae on abdominal segments becoming lighter apically, terminal hairs darkened in basal half.

Head approximately as wide as long, cheeks converging to eyes, slightly rounded posteriorly, dorsal surface reticulate, cheeks roughened, with several minute setae set on small warts; postoculars shorter than length of eyes, heavy, with expanded tips; eyes large, subovate, approximately 0.3 times longer and noticeably wider on dorsal surface; posterior ocelli placed opposite middle of eyes; antennae normal for the genus, segments 5 and 6 obliquely truncate, 3 with one sensecone, 7 and 8 joined as a unit; ventral surface of head extended posteriorly, mouthcone reaching posterior margin of prosternum, with labrum narrowed to a point and labium narrowed to a rounded end.

Prothorax 0.75 times as long as head, its front margin weakly concave and posterior margin weakly convex, dorsal surface reticulate; all setae conspicuously short and heavy, nearly subequal, with expanded tips; median thickening weak and incomplete; fore femora enlarged, fore tarsus with a strong tooth; forewings with 17 double fringes. Abdomen moderately heavy, lateral setae like those on thorax, with dilated tips, those on segment 9 shorter than tube; segments 2 to 7 each with two pairs of sigmoid setae, terminal hairs shorter than tube; tube 0.66 times as long as head, with nearly straight sides.

Total length 1.96 mm.; head length and width 0.259 mm.; prothorax length 0.176 mm., width 0.367 mm.; pterothorax width 0.455 mm.; abdomen width 0.514 mm.; tube length 0.176 mm., width at base 0.080 mm. Antennal segments length (width): II, 56 (36); III, 80 (30); IV, 73 (33); V, 66 (30); VI, 56 (30); VII and VIII, 83 microns; total length 0.430 mm.; length of setae: postoculars 63, on anterior margin of pronotum 33, anterior angles 50, posterior angles 66 microns.

Allotype male. Similar in color to female but yellowish in median portions; forelegs including fore tarsal tooth much stronger; median thickening of pronotum nearly complete to anterior margin and complete to posterior margin.

Type material and localities. Holotype female, Upper Williams River, New South Wales, October, 1926 (A. M. Lea and Wilson), (Moulton no. 3133); allotype male, Bribie Island, Moreton Bay, Queensland (A. M. Lea and Hacker), (Moulton no. 3140).

Remarks. This species may be compared with *T. bursariicola* Priesner, but in this latter form the head is much longer, antennal segments 7 and 8 are not compactly joined, the setae on posterior angles of pronotum are longer than the others and all are darkened basally, also the tube is approximately 0.9 times as long as head.

Diplonychothrips Moulton, new genus

Type species. *Diplonychothrips antennatus* Moulton, new species.

Description. Head distinctly longer than wide, rounded in front, with even, slightly arched cheeks, reticulate, with one pair of postoculars placed away from eyes, these short, with dilated tips; eyes moderately large, subovate, dorsal and ventral surfaces almost alike; antennae 8-segmented, short, compact, only slightly longer than head, segment 2 largest, intermediate segments subglobose, with pedicels, 6 to 8 joined as a unit; mouthcone short, rounded. Prothorax with all normal setae, these short, with dilated tips; forelegs strong, fore tibiae short, truncate; fore tarsus with a strong, pointed tooth, the usual claw is also long and pointed; wings with parallel sides, fore pair with double fringes. Lateral setae on abdomen like those on prothorax; tube shorter than head, with straight sides.

This genus has many of the characters of *Froggattothrips* Bagnall, *Ropalothrips* Hood, *Ropalothripoides* Bagnall, *Teuchothrips* Hood. It resembles the last except for antennae and eyes. The postocellars are developed in *Ropalothrips* and postoculars are wanting. In *Froggattothrips* the head broadens posteriorly where it is as wide or wider than long and the mouthcone is heavy, extending across prosternum; in *Ropalothripoides* the head is wider than long and the mouthcone pointed.

The name is derived from the Greek diploos, doubly, and onychus, claw, plus the generic name *Thrips*.

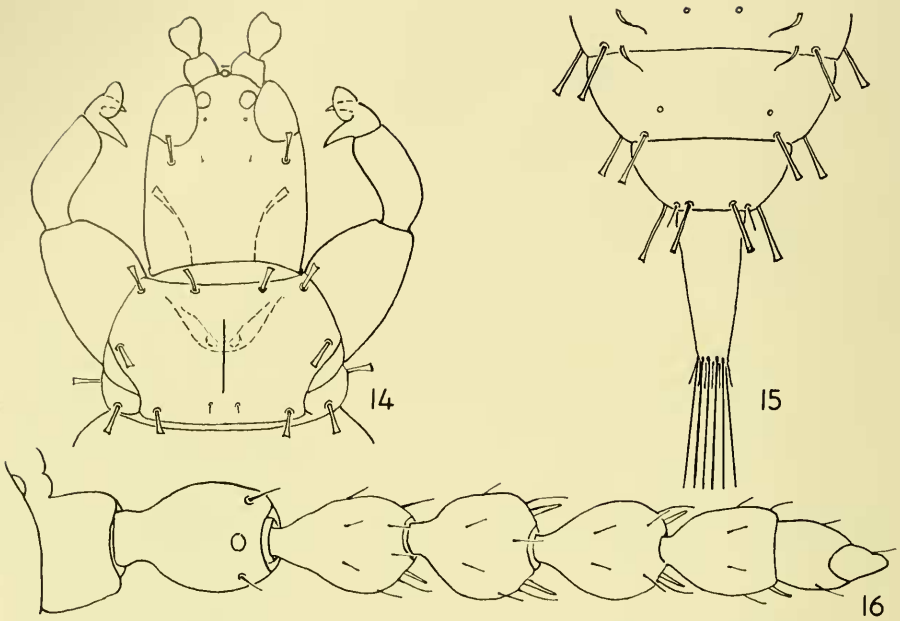
Diplonychothrips antennatus Moulton, new species.

(Figures 14, 15, 16.)

Holotype female. Color dark brown, tube black; fore tibiae darkened along the margins but yellowish through the middle, third antennal segment somewhat lighter than the others, being yellowish brown; wings clear.

Head 0.2 times longer than wide, broadly rounded in front, cheeks weakly and evenly arched, roughened, without genal setae; postoculars short, reaching only to posterior margins of eyes; eyes normal, ocelli reasonably small, posterior pair contiguous with inner margins of eyes; mouthcone short, extending 0.5 across prosternum; antennae approximately 0.2 times longer than head, segment 3 with one and 4 and 5 with two sensecones.

Prothorax approximately 0.6 times wider than long, with an incomplete median thickening and complete sutures; with all normal setae, these short, subequal, with dilated tips; wings moderately slender, fore pair with 11 double



FIGURES 14–16. *Diplonychothrips antennatus*, new genus and new species, holotype female. Figure 14, head and prothorax; figure 15, tip of abdomen; figure 16, right antenna.

fringes. Abdomen normal, the lateral setae somewhat longer than those on prothorax; tube 0.8 times as long as head, with straight sides and not constricted before the end, terminal hairs shorter than tube; terga 2 to 7 each with two pairs of sigmoid setae.

Total length 1.8 mm.; head length 0.22 mm., width 0.185 mm.; prothorax length 0.147 mm., width not including coxae 0.279 mm.; tube length 0.176 mm., width at base 0.080 mm. Antennal segments length (width): II, 50 (36); III, 40 (33); IV, 43 (36); V, 40 (33); VI, VII and VIII, 50 microns; total 0.26 mm.

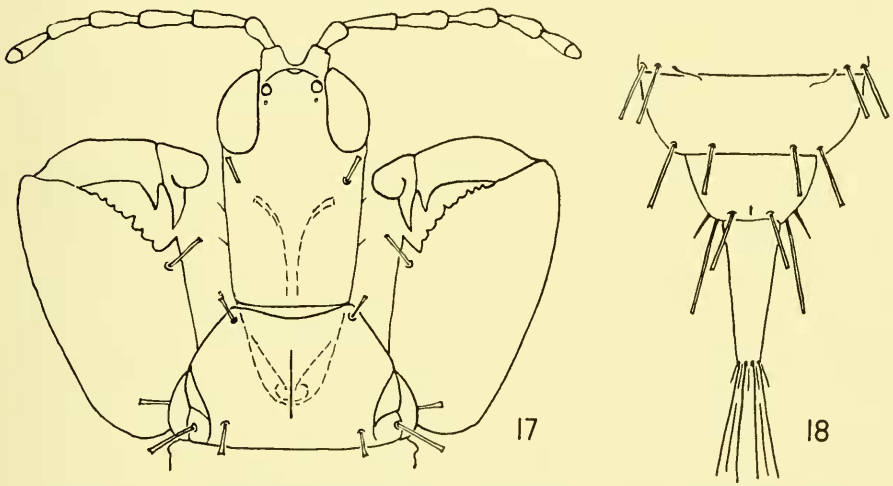
TYPE MATERIAL AND LOCALITY. Holotype female and three female paratypes, Owieandana, North Flinders Range, South Australia, November, 1924 (Hale and Tindale), (Moulton nos. 3169, 3171, 3172).

Thaumatothrips distinctus Moulton, new species.
(Figures 17, 18.)

HOLOTYPE FEMALE. Color blackish brown; antennal segment 1 colored like head, 2 lighter apically, 3 to 6 mostly yellow, gradually becoming darker with the apical third of 6 blackish brown like 7 and 8; all femora dark brown, fore tibiae mostly yellow, darkened on outer margins, middle and hind tibiae lighter at bases; all tarsi yellow to brownish yellow; wings clear; setae clear on head

and thorax, light brown on terminal abdominal segments, blackish brown at end of tube.

Head 0.7 times longer than width across eyes, flattened in front, with swollen vertex, this not overhanging, cheeks evenly joined with eyes, with straight sides, reduced gradually to base of head, roughened, with a few minute, transparent setae; postoculars placed well back from eyes and near side margins of head, with blunt tips; anterior ocellus on rounded vertex, directed forward, posterior ocelli placed near anterior inner margins of eyes; eyes large, moderately long, subovate, inner margins almost straight; antennae 8 segmented, 3 three times longer than wide, with one sensecone, 4 swollen near base and more so near apical end with three sensecones, 7 and 8 joined as a unit but with distinct suture, all segments with heavily chitinized side margins; mouthcone rounded, reaching 0.75 across prosternum, labrum narrowed at end, pointed.



FIGURES 17, 18. *Thaumatothrips distinctus*, new species, holotype female. Figure 17, head and prothorax; figure 18, tip of abdomen.

Prothorax approximately 0.6 times as long as head, not greatly enlarged as compared with forelegs, setae short, with dilated tips; fore femora massive, longer than head and at middle nearly as wide, armed on the inside near base with a sharp tooth and a continuing series of about seven smaller teeth on apical inner margin; fore tibiae short, stout, each with a strong tooth, tarsal tooth much stronger; middle and hind legs long, moderately stout; wings entirely clear, of even width, fore pair without double fringes. Abdomen normal, tube 0.55 times as long as head, with straight sides, gradually reduced and only noticeably constricted at tip, terminal hairs longer than tube.

Total length 2.45 mm.; head length 0.396 mm., width across eyes 0.235 mm., near posterior margin 0.190 mm.; prothorax length 0.22 mm., width without

coxae 0.323 mm., including coxae 0.396 mm.; pterothorax width 0.396 mm.; tube length 0.22 mm., width at base 0.088 mm., near tip 0.044 mm. Antennal segments length (width): III, 83 (28); IV, 76 (33); V, 73 (33); VI, 66 (33); VII and VIII, 80 microns; total 0.47 mm.; length of fore femur 0.455 mm., width near middle 0.22 mm.; length of setae: postoculars 46, on anterior angles of prothorax 50, on posterior angles 70, on ninth abdominal segment 133, terminal hairs 316 microns.

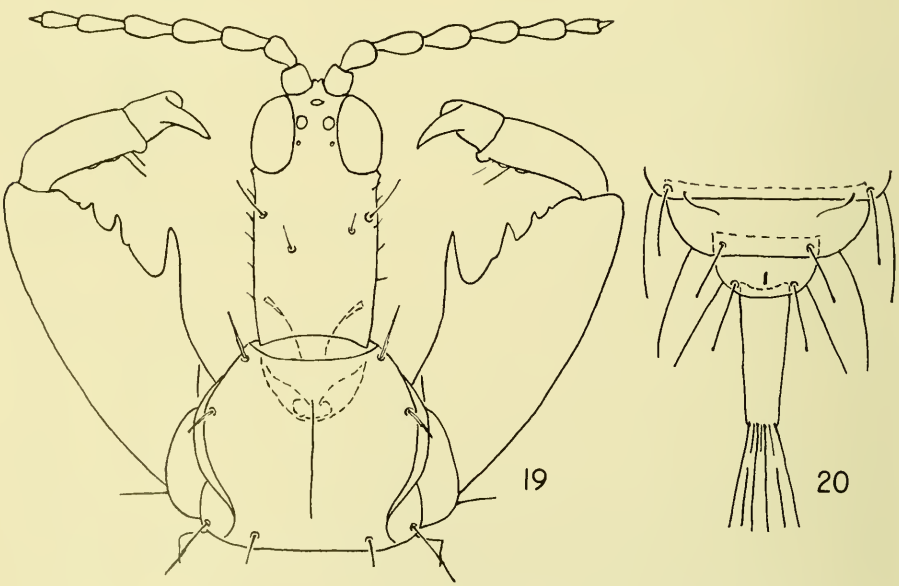
Type material and locality. Holotype female, Barton, South Australia (A. M. Lea), (Moulton no. 3113).

Remarks. The relatively long head, differently shaped intermediate antennal segments and absence of double fringes on forewings separate this species from *T. froggatti* Karny.

Thaumatothrips acaciae Moulton, new species.
(Figures 19, 20.)

Holotype female. Color dark chestnut brown with teeth on fore femora, median portions of fore tibiae and tarsi nearly clear yellow; antennal segments 1 dark, 2 lighter apically, 3 to 7 each yellow in basal half, darkened apically; all major setae and wings clear.

Head approximately 2.0 times longer than wide, its sides nearly straight and parallel, with a distinct emargination between eyes and cheeks; cheeks with 3



Figures 19, 20. *Thaumatothrips acaciae*, new species, holotype female. Figure 19, head and prothorax; figure 20, end of abdomen.

or 4 setae on either side, set on small warts; postoculars placed well back from eyes and near side margins of head, pointed; eyes elongate ovate, ocelli normal, placed well forward; antennae with 8 segments, 3 approximately 2.0 times longer than wide, irregular-clavate, with one sensecone, 4 to 6 more evenly clavate, 4 with four and 5 with two sensecones, 8 very small, conical, closely joined with 7; mouthcone short, rounded, extending over 0.3 the length of prosternum.

Prothorax 0.75 as long as head and noticeably wider than long, with normal setae which are pointed; fore legs massive, fore femora longer than head and approximately as wide, with a prominent tooth near middle of inside margin and three or four progressively smaller ones before apical end; fore tibiae short and stout, roughened on the inside and with a rounded, corn-like tooth at inner end; fore tarsus with a strong tooth; wings moderately wide, with parallel sides, fore pair without double fringes. Abdomen normal, its lateral setae nearly pointed; tube 0.6 times as long as head, with nearly straight sides, weakly reduced from base to tip.

Total length 2.45 mm.; head length 0.41 mm., width across cheeks 0.205 mm.; prothorax length 0.308 mm., width without coxae 0.396 mm., including coxae 0.47 mm.; length of fore femora 0.573 mm., width near middle 0.196 mm.; tube length 0.235 mm., width near base 0.073 mm., tube 0.57 as long as head. Antennal segments length (width): II, 56 (43); III, 83 (40); IV, 76 (43); V, 73 (40); VI, 73 (36); VII, 66 (26); VIII, 16 microns, total 0.50 mm.

Type material and locality. Holotype female and two female paratypes, Gilgandra, New South Wales, 1926 (W. W. Froggatt), taken on *Acacia doratoxylon* (Moulton no. 1686).

Remarks. This species has the general appearance of an *Euoplothrips* but the broad, parallel-sided wings separate it clearly from that genus. It is separated from both *T. froggatti* and *T. distinctus* by its longer head and pointed setae.

Panoplothrips Moulton, new genus

Type species. *Panoplothrips australiensis* Moulton, new species.

Head approximately 0.3 times longer than wide and slightly but distinctly produced in front of eyes, cheeks nearly straight and parallel except at base where head is constricted, neck-like, with three or four minute genal setae; eyes large, oval, occupying about 0.4 of head's length, of equal size ventrally; ocelli small, anterior in position; postoculars short, pointed, placed close to eyes and near side margins of head; antennae 8 segmented, 3 irregular-clavate, approximately three times longer than its greatest width, 4 to 7 clavate, 8 short, conical, closely joined with 7; mouthcone short, rounded, labrum pointed.

Prothorax heavy, shield-shaped, slightly wider than long, with complete median dorsal thickening, sutures complete; all normal setae greatly reduced except inner pair on posterior angles which are long and pointed. Fore femora massive, clearly longer than head and fully as wide, armed with a short, broad-seated tooth on the inside near apical end; fore tibiae unarmed; each fore tarsus

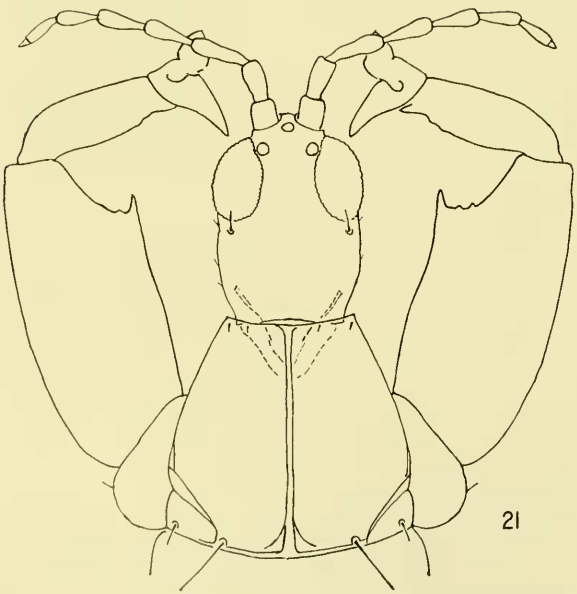
with a long pointed tooth; wings broad, with parallel sides. Tube 0.7 times as long as head, broadest at base, reduced gradually to basal third and less so to apical end.

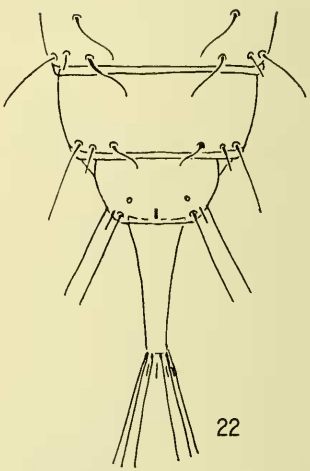
The genus has the general appearance of *Paracholeothrips*, also a new genus, but is separated by the head being produced in front of the eyes, by the armed fore femora and the reduced setae on head and prothorax. It is also closely related to *Thaumatothrips* Karny but separated by the shape of the head, reduced major setae and unarmed fore tibiae.

The name is derived from the Greek pan, whole, and hoplon, armor, plus the generic name *Thrips*.

Panoplothrips australiensis Moulton, new species.
(Figures 21, 22.)

HOLOTYPE FEMALE. Forepart of head, sides of pterothorax and abdomen and most of legs dark to blackish brown, this color shading to nearly black on cheeks; median portion of head lighter with a clear yellow area on either side beginning behind each eye and becoming wider as it extends backward to include most of the posterior portion of head; prothorax, fore coxae, inner half of fore femora, fore tarsi, also median portion of pterothorax and abdominal segments one to seven nearly clear yellow; first antennal segment dark like anterior part of





FIGURES 21, 22. *Panoplothrips australiensis*, new genus and new species, holotype female. Figure 21, head and prothorax; figure 22, end of abdomen.

head, 2 lighter, more so at apical end, 3 to 7 predominantly yellow but each successively becoming darker; wings clear.

Special characters as given for the genus are the slightly produced head, reduction of major setae on head and prothorax, the greatly enlarged and armed fore femora and the broad, clear wings, fore pair without double fringes; antennal segment 3 has one and 4 has two sensecones.

Total length 3.3 mm.; head length 0.44 mm., width at eyes 0.33 mm.; prothorax length 0.514 mm., width without coxae 0.588 mm.; tube length 0.308 mm., width at base 0.102 mm., at tip 0.044 mm.; tube 0.7 times as long as head; length of fore femur 0.588 mm., width 0.323 mm.; length of forewing 1.5 mm., width near middle 0.220 mm. Antennal segments length (width): I, 63 (53); II, 76 (50); III, 130 (42); IV, 103 (42); V, 100 (42); VI, 83 (33); VII, 80 (30); VIII, 30 microns, total length 0.66 mm.; length of setae: postoculars 40, inner pair on posterior angles of pronotum 123, accessory setae 83, outer pair 30 microns; on ninth abdominal segment 266, at end of tube 250 microns.

Type material and locality. Holotype female, Bluff, Queensland (A. M. Lea), (Moulton no. 3148).

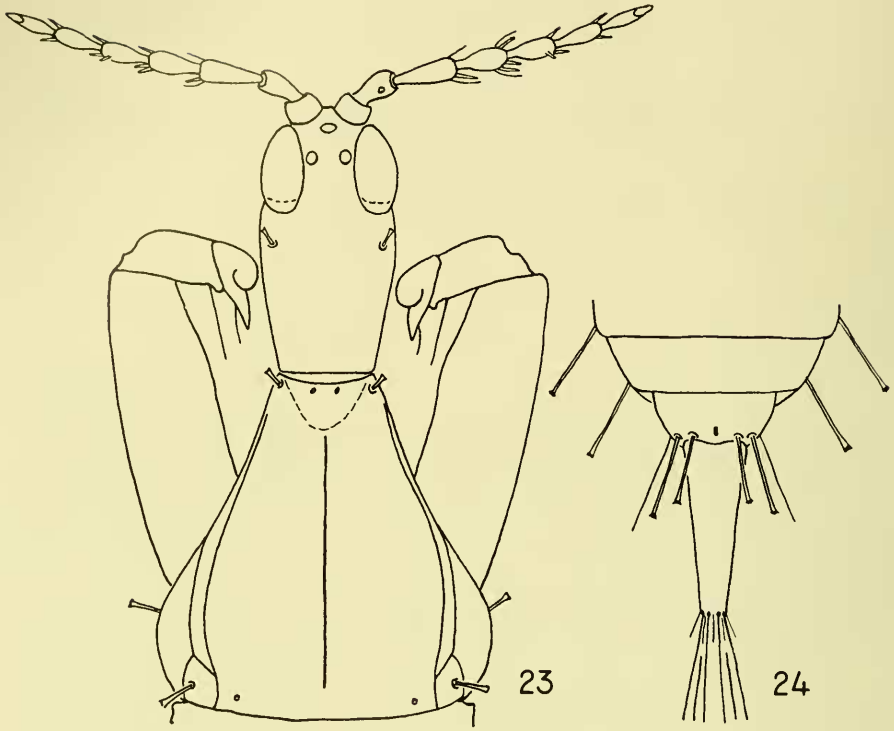
Grypothrips acaciae Moulton, new species.
(Figures 23, 24.)

Holotype female. Color blackish brown, fore tibiae and tarsi yellowish brown, antennal segments 1 darkest, especially at base, 2 darkened in basal third, 3 to 8 mostly yellow with apical ends of 6, 7, and 8 brown; wings clear.

Head 2.0 times longer than width across eyes, cheeks gently and almost evenly narrowed toward base, without genal setae; postoculars short, with dilated tips; eyes large, elongate ovate, shorter on ventral surface; ocelli small, posterior pair placed near center of eyes; mouthcone very short, as wide as long, rounded, extending over only 0.2 the length of prosternum; antennae only slightly longer than head, segment 3 with one and 4 with three sensecones, 7 and 8 closely joined.

Prothorax elongate shield-shaped, narrowed anteriorly, major setae short, with dilated tips; median thickening nearly complete; fore femora long, moderately strong, unarmed; fore tibiae short, truncate, with a small, corn-like swelling on inner apical end, each fore tarsus with a long, stout tooth; wings normal, fore pair with 20 double fringes. Abdomen normal, prominent lateral setae with dilated tips, terminal hairs shorter than tube.

Total length 2.55 mm.; head length 0.411 mm., width across eyes 0.191 mm.; prothorax length 0.50 mm., width near anterior margin 0.176 mm., near posterior margin, not including coxae, 0.367 mm.; tube length 0.264 mm., width at base 0.088 mm., near tip 0.044 mm.; fore femora length 0.455 mm., width near middle 0.132 mm.; longest setae on posterior angle of pronotum 44 microns. Antennal segments length (width): II, 66 (40); III, 93 (40); IV, 76 (43); V, 70 (36); VI, 66 (33); VII, VIII, 88 microns; total 0.47 mm.



FIGURES 23, 24. *Grypothrips acaciae*, new species, holotype female. Figure 23, head and prothorax; figure 24, end of abdomen.

TYPE MATERIAL AND LOCALITY. Holotype female, Millmerran, Queensland, 3 September 1928 (J. Macqueen), taken on *Acacia harpophylla* (Moulton no. 3068).

REMARKS. *Grypothrips mantis* Karny, the only other known species of the genus, is larger, 3.6 mm. in length, has normal strongly developed setae, each fore tibia has a strong tooth, forewings with 28 to 30 double fringes. This new species is smaller, with shorter setae, smaller mouthcone, the fore tibia is unarmed and forewings have a lesser number of double fringes.

Paracholeothrips Moulton, new genus

TYPE SPECIES. *Paracholeothrips validus*, new species.

Head approximately 0.4 longer than wide, flattened in front, cheeks nearly straight and parallel but reduced neck-like at base; dorsal surface with transverse lineation, cheeks minutely serrate; postoculars long, pointed, placed well back from eyes; genal setae minute; eyes large, occupying 0.3 times the head's length, shorter on ventral surface; ocelli present; mouthcone short and rounded,

extending over 0.3 the length of prosternum; antennae 8-segmented, segments 7 and 8 joined as a unit. Thorax heavy; prothorax longer than head, broadly shield-shaped, with complete median thickening, sutures complete; setae on anterior and posterior angles long, curved, nearly pointed, other setae minute; fore legs massive, fore femora and tibia unarmed, fore tarsus with a stout tooth; wings long and broad, apparently without double fringes. Abdomen stout, reduced beyond fourth segment, lateral setae long, curved, those on segment nine longer than tube, all nearly pointed; tube as long as head, strong, with straight sides which are only slightly reduced from base to tip; terminal hairs shorter than tube. The eighth abdominal segment extends posteriorly under segment nine and base of tube to form a broad ventral scale.

The head and thorax of this new genus resemble those of species of *Cholcothrips* Moulton but in this latter genus the fore tibiae are armed, the setae much shorter, the body more slender, wings narrower and the tube is shaped differently.

The name is derived from the Greek *para*, near, plus the generic name, *Cholcothrips*.

Paracholcothrips validus Moulton, new species.

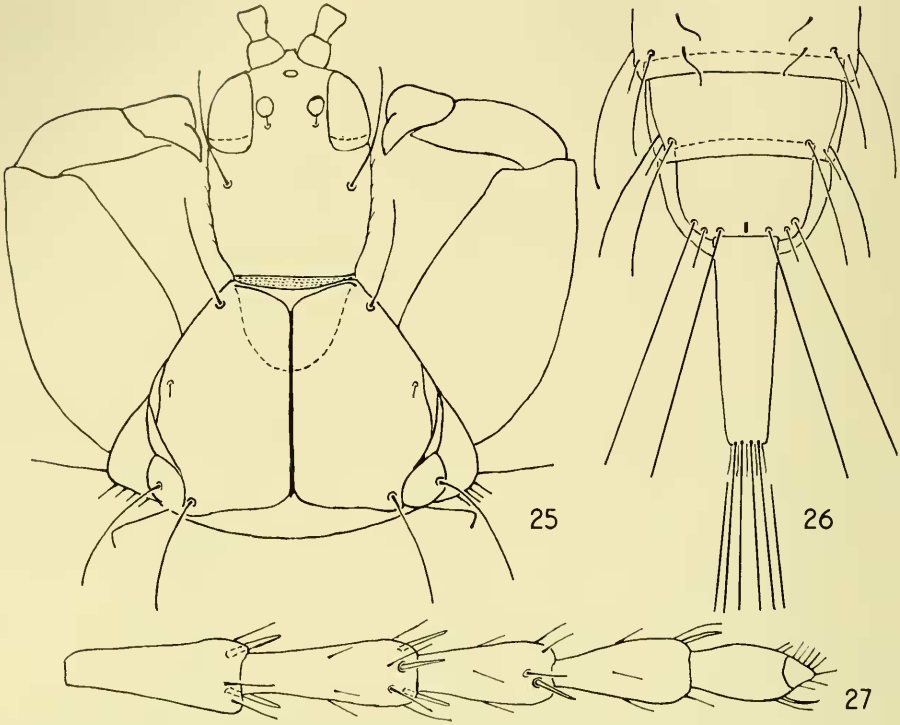
(Figures 25, 26, 27.)

Holotype female. Prevailing color yellowish brown with major portion of head, sides of pterothorax and end of abdomen including tube nearly black; base of head, prothorax, legs, median portion of pterothorax and abdominal segments one to five nearly clear, dark yellow; antennae with basal portions of segments clear yellow but the enlarged apical ends grayish brown; wings nearly clear.

Characters of special importance, as given in the generic description, are the massive fore body, unarmed fore femora and tibiae, the long curved clear yellow setae except those at tip of tube which are nearly black and the ventral abdominal scale; wings apparently without double fringes.

Total length 3.15 mm.; head length 0.396 mm., width 0.297 mm.; prothorax length 0.411 mm., width without coxae 0.529 mm.; pterothorax width 0.602 mm.; tube length 0.396 mm., width near base 0.117 mm.; length of setae: postoculars 233, on anterior angles of prothorax 166, posterior angles 166 to 216, on ninth abdominal segment 470, at tip of tube 352 microns. Antennal segments length (width): (paratype), III, 96 (50); IV, 100 (53); V, 86 (50); VI, 86 (46); VII, 66 (31); VIII, 23 microns; total 0.588 mm.

Type material and locality. Holotype female and one female paratype, Barton, South Australia (A. M. Lea), (Moulton no. 3116).



FIGURES 25–27. *Paracholeothrips validus*, new genus and new species, holotype female. Figure 25, head and prothorax; figure 26, end of abdomen; figure 27, right antenna.

Sacothrips Moulton, new genus

TYPE SPECIES. *Sacothrips bicolor* Moulton, new species.

Head approximately 2.0 times as long as width across eyes, cheeks roughened, reduced gradually from behind eyes to base of head; head without conspicuous marking or sculpturing; postocular setae long, pointed, placed well back from eyes and near sides of head; two or three genal setae present; eyes large, subovate, longer on dorsal surface; ocelli large, posterior pair contiguous with inner margins of eyes; antennae 8-segmented, 3 and 4 broadly clavate, each with four sensecones, 7 and 8 broadly joined; mouthcone short, rounded. Prothorax shield-shaped, 0.8 as long as head, with median dorsal thickening; prominent setae long, pointed; fore femora massive in larger, oedymer females, longer and wider than head, unarmed; fore tibiae geniculate-truncate, unarmed but with inner apical end drawn out in support of the strong tarsal tooth; fore legs of smaller, gynacoid males and females much smaller but conspicuously strong; wings long and narrow, slightly reduced in the middle, fore pair with double fringes. Abdomen drawn out, segments 2 to 6 of even width, 7 and 8 reduced, tube as long or longer than head, widest in basal fourth, sides nearly parallel

in middle half, reduced apically; lateral abdominal setae moderately long, those on segment 9 and end of tube less than half as long as tube; basal 50 to 70 percent of tube clothed with numerous minute setae.

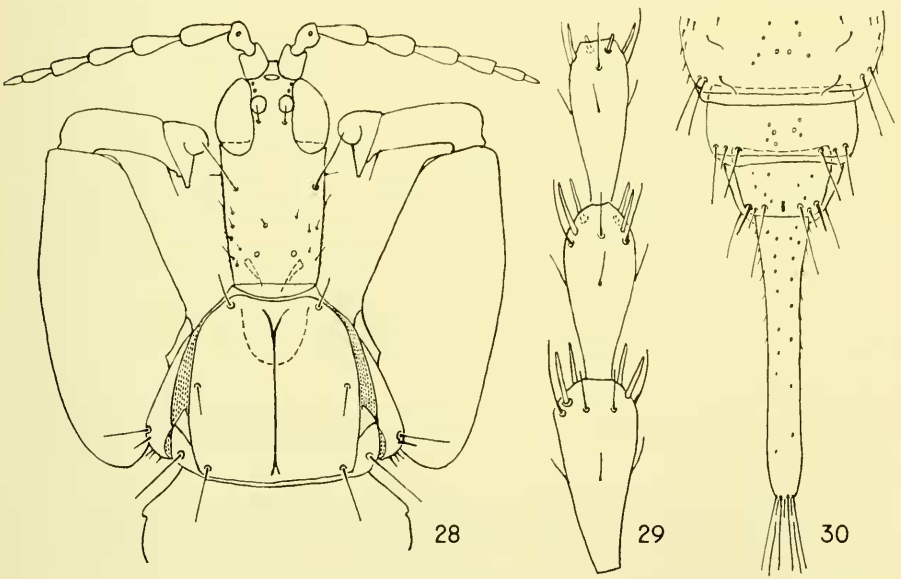
The genus is related to *Kladothrips* Froggatt but separated by the shape of head and tube and in having four sensecones on third antennal segment. It is similar to *Mesothrips* Zimmermann in having the wings narrowed at middle, but in this new genus the postoculars are placed at a distance from the eyes, the pronotum is shield-shaped, and the third antennal segment has four sensecones.

The name is derived from the Greek, *sakos*, shield, plus the generic name *Thrips*.

Sacothrips bicolor Moulton, new species.
(Figures 28, 29, 30, 31.)

HOLOTYPE FEMALE, oedymer form: Head black in front, shading through brown to yellow at extreme base; thorax, first abdominal segment, fore legs, nearly clear yellow, middle and hind legs nearly black, somewhat lighter at the joints; abdomen dark brown with apical segments and tube black; first antennal segment nearly black like forehead, 2 lighter apically, 3 to 7 mostly yellow with 3 and 4 grayish brown in apical third, 5 in apical half, 6 and 7 brown, lighter at both ends, their setae blackened.

Head approximately 2.0 times longer than width across eyes and somewhat longer than prothorax, cheeks roughened, with a pair of genal setae behind eyes



FIGURES 28–30. *Sacothrips bicolor*, new genus and new species. Figure 28, head and prothorax, holotype female; figure 29, right antenna, holotype female; figure 30, end of abdomen, holotype female.

and a second longer pair near base of head; postoculars long and pointed, placed at some distance from eyes; eyes large, fully 0.3 times as long as head; ocelli large, contiguous with inner margins of eyes, their diameter approximately equal to the interval between them; third antennal segment more connate than clavate, broadest of all and especially characterized by its four sensecones.

Prothorax shield-shaped, with normal, moderately long, pointed setae; the median thickening is heavy and nearly complete; fore legs massive, unarmed except for a strong tarsal tooth, middle and hind legs slender; wings very slightly narrowed in the middle, fore pair with 42 double fringes. Abdominal terga 2 to 7 each with two pairs of sigmoid setae; outer pair of setae on ninth abdominal segment reduced to short, stout spines, usually only in the male.

Total length 3.85 mm.; head length 0.529 mm., width across eyes 0.279 mm., near posterior margin 0.205 mm.; prothorax length 0.455 mm., width without coxae 0.514 mm.; pterothorax width 0.661 mm.; abdomen width 0.558 mm.; tube length 0.661 mm., width at base 0.117 mm., near tip 0.058 mm. Antennal segments length (width): I, 56 (56); II, 70 (46); III, 133 (60); IV, 116 (53); V, 110 (43); VI, 93 (36); VII, 83 (30); VIII, 50 microns; total length 0.735 mm.

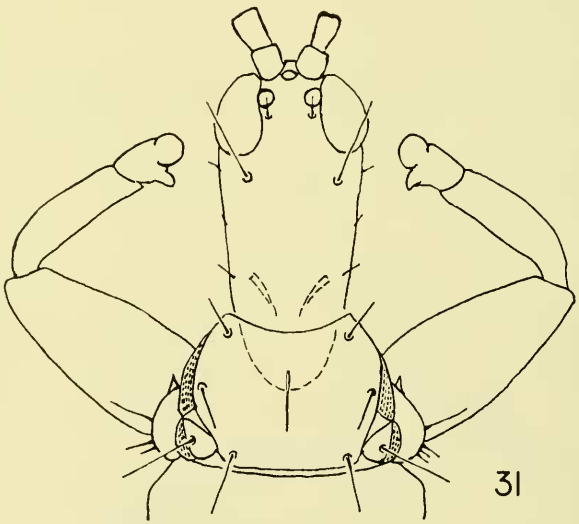


Figure 31. *Sacothrips bicolor*, new genus and new species, head and prothorax, allotype male.

Allotype male. Similar to smaller females, forewings with 31 double fringe hairs. Total length 2.87 mm.; head length 0.441 mm., width at eyes 0.259 mm., near posterior margin 0.191 mm.; prothorax length 0.264 mm., width without coxae 0.369 mm.; pterothorax width 0.50 mm., abdomen width 0.441 mm.; tube length 0.411 mm., width at base 0.088 mm., near tip 0.050 mm. Antennal

segments length (width): III, 110 (50); IV, 100 (50); V, 90 (36); VI, 83 (30); VII, 83 (26); VIII, 46 microns; total length 0.632 mm.

Paratype female, smaller gynacoid form, total length 3.5 mm.; head length 0.441 mm., width at eyes 0.259 mm., near posterior margin 0.191 mm.; prothorax length 0.279 mm., width without coxae 0.367 mm.; pterothorax width 0.455 mm.; abdomen width 0.441 mm.; tube length 0.455 mm., width at base 0.102 mm., near tip 0.058 mm. Female of smaller gynacoid form in all respects similar to larger females except that the forelegs are less massive, there is a much weaker median dorsal thickening on the pronotum, and forewings have 28 double fringe hairs.

Type material and locality. Holotype female, allotype male, and nine large and two small female and four male paratypes, Millmerran, Queensland, 3 September 1928 (W. W. Froggatt), taken on "Wilga," (Moulton no. 3067).

Tribe Plectrothripini Priesner, 1927

Sphaericothrips Moulton, new genus

Type species. *Sphaericothrips clarapennis* Moulton, new species.

Head 2.0 times as long as width behind eyes, narrowed anteriorly, gradually becoming wider to posterior margin; cheeks straight and smooth; dorsal surface without markings; postocular setae small; eyes elongate, flattened at the sides, occupying about 30 percent of the sides of head, joining cheeks evenly; ocelli small, placed far forward; antennae 8-segmented, 0.7 times as long as head, with short, compact segments, 3 and 4 broadly globular, narrowed toward their bases, 7 and 8 broadly joined; mouthcone rounded, extending over 0.6 the length of prosternum, labrum narrowed before the end and pointed; sense area on second antennal segment placed near middle of segment. Prothorax as long as head, joining head evenly and expanding posteriorly; setae on posterior angles moderately long, with dilated tips; forelegs strong, femora long, tibiae short and truncate, both unarmed, fore tarsus with a strong claw; wings slender, of even width, fringes placed sparsely. Abdominal segments 2 to 7 of about even width, 8 and 9 abruptly reduced, tube 0.6 times as long as head, reduced evenly from base to tip.

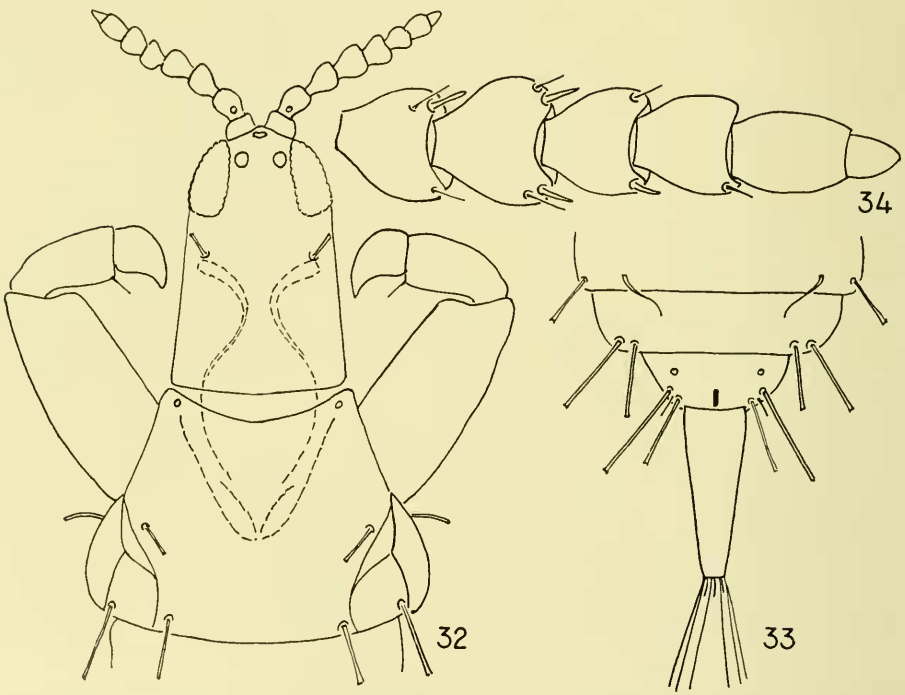
This genus belongs to the tribe Plectrothripini Priesner, the sense area on segment 2 being placed near the middle of the segment. It approaches *Streptothrips* Priesner in the shape of antennal segments and *Thorybothrips* Priesner in the shape of the head, but appears to be most closely related to *Kladothrips* Froggatt. It is distinctive because of the short, compact antennal segments and the relatively narrow wings.

The name is derived from the Greek *sphairikos*, globular, plus the generic name, *Thrips*.

Sphaerothrips clarapennis Moulton, new species.
(Figures 32, 33, 34.)

HOLOTYPE FEMALE. Color chestnut brown, abdomen darker; forelegs brownish yellow, middle and hind legs blackish brown; first antennal segment deep brown, segment 2 shading to yellow apically, 3 to 8 clear yellow; wings clear.

With characters as given for the genus, the antennae are short and compact, with all segments semiglobular, each narrowed at base to a broad pedicel; segment 3 with one sensecone, 4 with two sensecones; forelegs are enlarged, fore tarsus with a strong tooth; all major setae are small, with blunt tips, those at anterior angles of prothorax apparently wanting; pronotum without markings or median thickening; forewings with nine double fringe hairs; sides of tube almost straight.



FIGURES 32–34. *Sphaericothrips clarapennis*, new genus and new species, holotype female. Figure 32, head and prothorax; figure 33, end of abdomen; figure 34, right antenna.

Total length 1.33 mm.; head length 0.260 mm., width behind eyes 0.147 mm., near posterior margin 0.168 mm.; prothorax length 0.260 mm., width without coxae 0.264 mm.; pterothorax width 0.280 mm.; length of tube 0.160 mm., width at base 0.065 mm., at tip 0.029 mm. Antennal segments length (width): I, 30 (30); II, 33 (30); III, 33 (30); IV, 33 (33); V, 30 (30); VI, 26 (26); VII, 30

(20); VIII, 16 microns; total 0.196 mm.; setae on posterior angles of prothorax 60 microns.

Type material and locality. Holotype female, Yenda, Leeton, New South Wales, 8 February 1927 (W. W. Froggatt), taken on *Acacia* species (Moulton no. 1706).

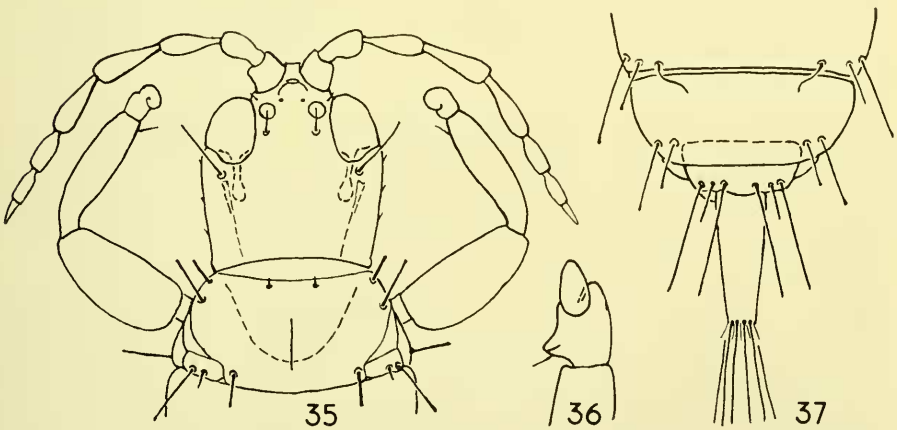
Subfamily Megathripinae Karny, 1921
Tribe Compsothripini Priesner, 1927

Bolothrips (Bolothrips) flavitibia Moulton, new species.
(Figures 35, 36, 37.)

Holotype female (macropterous). Color uniformly deep brown, except all tibiae and tarsi which are clear yellow; antennal segments 3 to 5 largely yellow with 3 darkened in apical half, 4 and 5 mostly brown in apical two-thirds, 6 lighter at extreme base; wings light brown, prominent setae brownish yellow.

Head 0.15 times longer than wide, slightly produced in front of eyes, cheeks somewhat rounded, reduced toward base, nearly smooth, genal setae minute; postoculars long, nearly pointed, placed close behind eyes; eyes large, subovate on dorsal surface but narrowed and greatly extended posteriorly on ventral surface; ocelli moderately small not contiguous with inner margins of eyes; antennae slender, approximately 0.5 times longer than head, intermediate segments elongate-clavate, 3 to 5 not modified on ventral, apical surface, 8 clearly separated from 7; segment 3 with two, 4 with four sensecones; mouthcone broadly rounded, extending over 0.66 the length of prosternum.

Prothorax transverse, pronotum with weak and incomplete median thickening; sutures complete; with normal, moderately long blunt setae except the



Figures 35–37. *Bolothrips flavitibia*, new species. Figure 35, head and prothorax, holotype female; figure 36, fore tarsus, allotype male; figure 37, end of abdomen, holotype female.

antero-marginals which are minute; legs slender, fore tarsi unarmed; fringes of forewings rather widely spaced, with 5 to 8 double fringes. Abdomen normal, lateral setae moderately long on apical segments; terga 2 to 7 each with one pair of sigmoid setae; tube 0.7 times as long as head, with straight sides, weakly reduced from base to tip, terminal setae shorter than tube.

Total length 1.6 mm.; head length 0.264 mm., width 0.230 mm.; prothorax length 0.147 mm., width without coxae 0.279 mm.; pterothorax width 0.338 mm.; tube length 0.191 mm., width at base 0.065 mm.; dorsal length of eye 0.088 mm., ventral length 0.132 mm. Antennal segments length (width): II, 56 (33); III, 76 (28); IV, 83 (28); V, 83 (28); VI, 60 (26); VII, 50; VIII, 33 microns; total 0.44 mm.

Allotype male. Similar to female in color and form but with more slender abdomen; fore tarsus with a broad-seated, blunt tooth.

Type material and localities. Holotype female (Moulton no. 3144) and four female paratypes (Moulton nos. 3144, 3155, 3083), Cairns District, Queensland (A. M. Lea); allotype male, Upper Williams River, New South Wales, October, 1926 (A. M. Lea and Wilson), (Moulton no. 3131).

Remarks. This species may be separated from other members of this subgenus by its clear yellow tibiae and tarsi.

Bolothrips (Bolothrips) australiensis Moulton, new species.

Holotype female (apterous). Color nearly black with apical end of antennal segments 2 and 3, extreme base of 4 and 5, fore tibiae and tarsi, shading lighter to brown; major setae dark.

Head approximately 0.6 times longer than wide, slightly but distinctly produced in front of eyes, cheeks nearly straight and parallel; postoculars long, pointed, placed close behind eyes; postocellar setae also present, about half as long as postoculars; eyes weakly protruding, longer on ventral surface; ocelli small; antennae approximately 0.6 times longer than head, segment 3 with two and 4 with three sensecones.

Prothorax 2.0 times wider than long, with complete sutures and a weak incomplete median dorsal line; setae on anterior margin and angles reduced, midlaterals and pair on posterior angles longer, nearly pointed; forelegs moderately thickened, fore tarsi unarmed; wings wanting. Abdomen wider than thorax; tube 0.68 times as long as head.

Total length 2.13 mm.; head length 0.323 mm., width 0.230 mm.; prothorax length 0.176 mm., width 0.338 mm.; tube length 0.220 mm., width at base 0.088 mm., at tip 0.044 mm.; antennal segments length (width): II, 60 (40); III, 100 (36); IV, 100 (36); V, 80 (36); VI, 66 (33); VII, 50 (30); VIII, 33 microns; total 0.514 mm.; length of setae, postoculars 116, postocellars 63, on anterior margin and angles of pronotum 20, midlaterals 50, on posterior angles: inner 83, outer 80, microns.

Type material and localities. Holotype female, Lord Howe Island (A. M. Lea), (Moulton no. 3161); one female paratype, Mt. Gower, Lord Howe Island (A. M. Lea), (Moulton no. 3159).

Remarks. This species is most closely related to *B. badius* Hood from Nelson, N. Queensland but is separated by its shorter head, presence of posterior ocelli, by the shorter and more compact antennal segments and the reduced setae on fore angles of pronotum.

Eurynotothrips Moulton, new genus

Type species. *Eurynotothrips latapennis* Moulton, new species.

Head approximately 0.3 times longer than wide, drawn out slightly but distinctly in front of eyes, bases of antennae widely separated, cheeks slightly swollen and smooth immediately behind eyes, roughened beyond, narrowed posteriorly, weakly constricted, then thickened at extreme base; with a single pair of long, pointed postoculars placed well back behind middle of eyes; several strong genal spines present; eyes flattened on outer margins, slightly protruding, ocelli small, posterior pair widely separated; antennae 8-segmented, all clearly separated, apical ends of 4 to 6 specialized on ventral surface; mouthcone short and rounded. Prothorax transverse, with normal setae, those on posterior angles alone long and prominent; median dorsal thickening nearly complete, sutures complete; forelegs powerful, fore femora enlarged, fore tarsus with a broad-seated tooth in both sexes; wings unusually wide, with broadly rounded tips, fore pair with a long series of double fringes. Abdomen heavy, tube nearly as long as head, with straight sides which are weakly reduced from base to tip; setae on ninth segment and at tip of tube longer than tube.

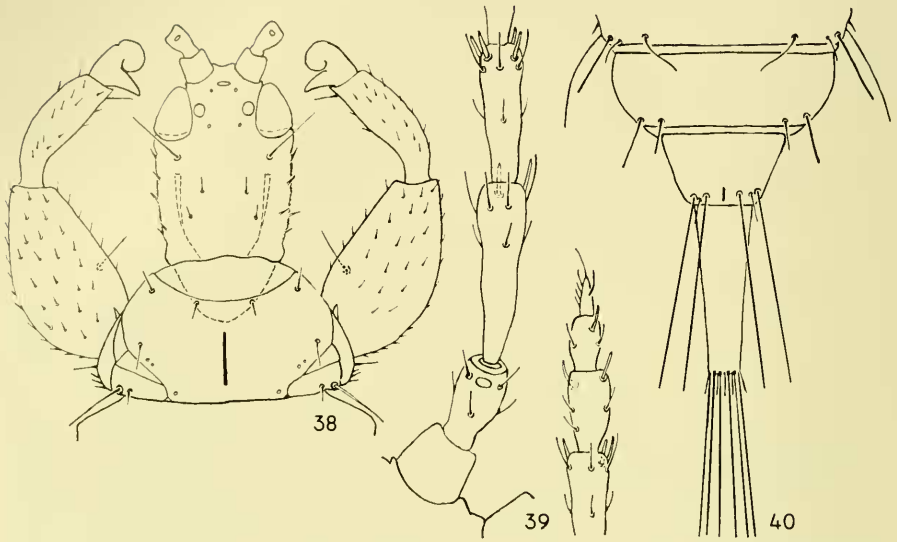
This genus has the appearance of a large *Hoplothrips* Amyot and Serville but differs in the modified ventral surface of antennal segments 4 to 6 and the unusually broad wings. *Scotothrips* Priesner has broad wings but long pronotal setae and two pairs of postoculars. The head and eyes resemble those in *Machatothrips* Bagnall but this genus also has two pairs of postoculars and the wings, while broad, are narrowed before the ends. *Bolothrips* Priesner has postocular setae placed close behind eyes and fore tarsus unarmed in the female. The widely separated basal antennal segments, distinctive shape of segments 3 to 5, modified undersurface of 4 to 6 and the unusually broad wings with a long series of double fringes characterize this new genus.

The name is derived from the Greek *eurys*, broad, and notos, back, plus the generic name *Thrips*.

Eurynotothrips latapennis Moulton, new species.

(Figures 38, 39, 40.)

Holotype female. Color nearly black except basal 0.7 of antennal segment 3, 0.5 of 4, fore tibiae, all tarsi and joints of legs which are brownish yellow; prominent setae of head and prothorax nearly clear, those at end of abdomen brownish yellow.



Figures 38–40. *Eurynotothrips latapennis*, new genus and new species, holotype female. Figure 38, head and prothorax; figure 39, left antenna; figure 40, end of abdomen.

Head 0.36 times longer than wide but still noticeably broad, gently but evenly narrowed posteriorly, weakly constricted neck-like and then thickened at extreme base; cheeks roughened except immediately behind eyes where they are smooth, with 5 or 6 thorn-like genal setae on either side; with one pair of long, pointed postoculars placed behind middle of eyes; eyes slightly protruding, somewhat flattened on outer margins; posterior ocelli widely separated, nearly contiguous with inner margins of eyes. Antennae 0.6 times longer than head, with first segments widest, 3 longest, 3 to 5 distinctive in shape, swollen in basal third and distal fourth, each broadly narrowed near middle, 3 with two and 4 with four moderately short sensecones, 4 to 6 modified on under surfaces apically; mouthcone short, not reaching middle of prosternum.

Prothorax transverse, nearly 2.0 times wider than median length, pterothorax also heavy; legs unarmed except for a strong tarsal tooth; wings of nearly even width to near middle then becoming gradually wider and broadly rounded at apical ends, fore pair 5.3 times longer than their greatest width, with 47 double fringes. Abdomen heavy, terga 2 to 7 each with a single pair of sigmoid setae near their posterior margins.

Total length with abdomen distended 4.55 mm.; head length 0.50 mm., width 0.367 mm.; median length of prothorax 0.294 mm., width 0.588 mm.; pterothorax width 0.837 mm.; abdomen width 1.0 mm.; tube length 0.485 mm., width at base 0.147 mm. Antennal segments length (width): II, 83 (50); III, 203

(53); IV, 150 (48); V, 120 (43); VI, 86 (43); VII, 53 (33); VIII, 43 microns; total 0.823 mm.

Allotype male. Similar in shape and color to the female.

Type material and localities. Holotype female and five female paratypes, Barton, South Australia (A. M. Lea), (Moulton no. 3091); allotype male and one female paratype, Port Lincoln, South Australia (A. M. Lea), (Moulton no. 3125).

Lasiothrips Moulton, new genus

Type species. *Lasiothrips perplexus* Moulton, new species.

Head approximately 0.5 longer than wide, flattened in front, cheeks smooth, nearly straight and parallel; surface of head finely sculptured with transverse lineation; anteocellars, postocellars and two pairs of postocular setae present; genal setae minute; eyes moderately small, slightly protruding, inner margins nearly straight, narrowed and extended posteriorly on ventral surface; ocelli present; antenna 8-segmented, long and slender, approximately 0.75 longer than head, segment 3 more than 4.5 times as long as its greatest width, with two sensecones, segment 4 of similar form, with four sensecones, other segments reduced gradually, 8 constricted at base; mouth cone short, rounded; projecting maxillary spines with little hooks at end. Pronotum with deeply concave anterior margin, 3.0 times wider than its median dorsal length, with normal, nearly pointed setae; sutures complete; pterothorax quadrate, much wider than prothorax, mesonotum sculptured like the head but interrupted by irregular blotches across the middle, with a long seta on either side and a shorter pair on posterior margin; metanotum deeply reticulate, with a pair of long setae near middle; forelegs slender in the male, tarsi unarmed; wings long and strong, distinctly narrowed in the middle, each forewing with a median, longitudinal dark line which broadens, divides and becomes diffused at narrowed portion of wing, with a long series of double fringes. Abdomen stout, reduced gradually beyond second segment, lateral setae strong, with nearly pointed tips; terga 2 to 7 each with two pairs of sigmoid setae; tube longer than head, stout, larger at base, followed by parallel sides to apical third where it is gradually reduced; sparsely covered with setae which are nearly as long as width of tube, terminal hairs short.

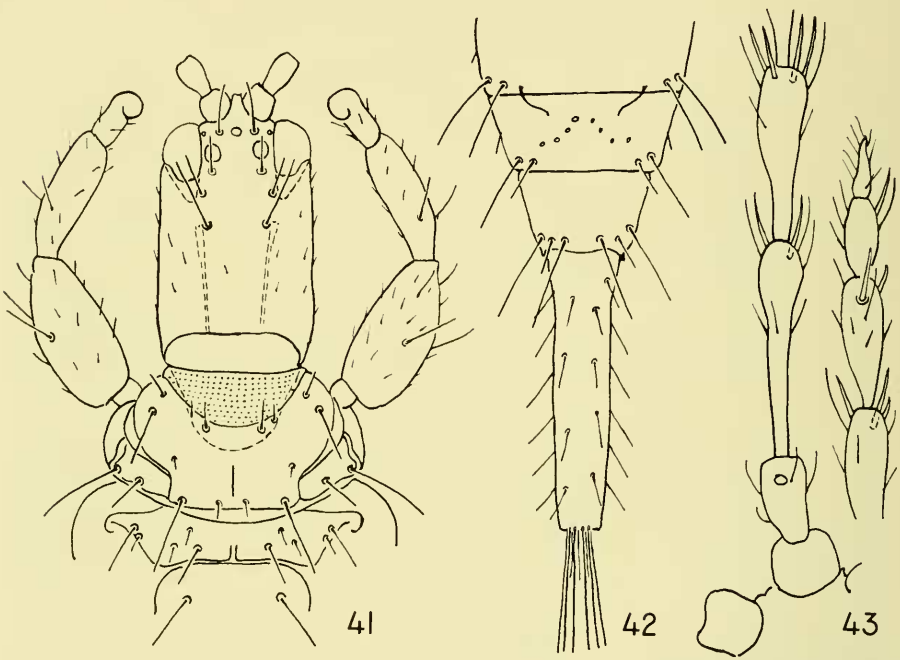
The characters which distinguish this genus are strongly those of the *Compsothripini* and not *Hoplothripini* as might be indicated by the wings being narrowed in the middle. It may be separated from *Phaulothrips* Hood by the narrowed-at-middle wings, unarmed fore tarsi and the setose tube which is somewhat similar to *Actinothrips* Bagnall. The shape of the antennae separates it from *Mesothrips* Zimmermann.

The name is derived from the Greek *lasios*, hairy, plus the generic name *Thrips*.

Lasiothrips perplexus Moulton, new species.

(Figures 41, 42, 43.)

HOLOTYPE MALE. Head and thorax blackish brown, abdomen nearly black, tube black; antennae blackish brown, with segment 3 and base of 4 yellow, extreme base of 5 light brown; legs blackish brown with joints and tarsi lighter; wings washed with brown, each with a darkened median line which extends to near middle of wing; setae dark brown, sensecones darkened.



FIGURES 41–43. *Lasiothrips perplexus*, new genus and new species, holotype male. Figure 41, head and prothorax; figure 42, end of abdomen; figure 43, right antenna.

With characters as given for the genus; anterior postoculars placed behind inner margins of eyes and a second longer pair directly behind them; eyes angular at inner posterior margins, drawn out posteriorly on ventral surface; posterior ocelli approximate to inner margins of eyes. Antennae slender, segment 3 with a long stalk, swollen only in apical third, with two sensecones, 4 with four sensecones; mouthcone short, rounded, extending 0.5 over prosternum; pronotum with weak and incomplete median thickening, midlateral setae placed far forward, accessory setae between pair on posterior angles also well developed; meso- and metanotum also with well developed setae; legs slender, unarmed; forewings with 38 double fringes. Abdomen strong, the lateral setae noticeably long and

dark colored, those on segment 9 approximately 0.3 times as long as tube; body including tube hairy.

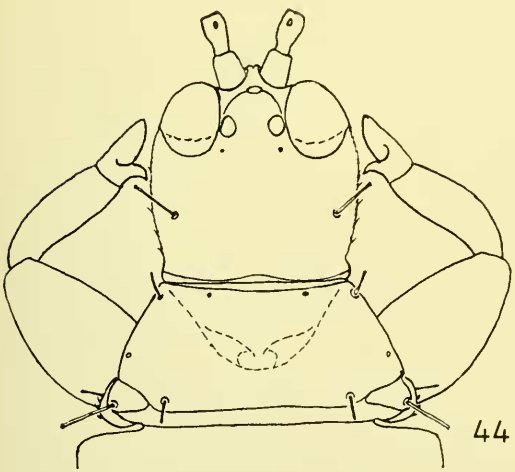
Total length 3.04 mm.; head length 0.455 mm., width 0.294 mm.; prothorax length 0.147 mm. in the middle, 0.259 mm. at sides, width 0.455 mm.; pterothorax width 0.632 mm.; tube length 0.529 mm., width near base 0.117 mm. Antennal segments length (width): III, 176 (40); IV, 143 (40); V, 133 (40); VI, 103 (36); VII, 56 (26); VIII, 56 microns; total 0.77 mm. Length of setae: anteocellars 80, postocellars 66, postoculars 66 and 130, on anterior margin of pronotum 80, anterior angles 40, midlaterals 150, outer on posterior angles 193, inner 176, on mesonotum 133, metanotum 183, on ninth abdominal segment 266, at tip of tube 216 microns.

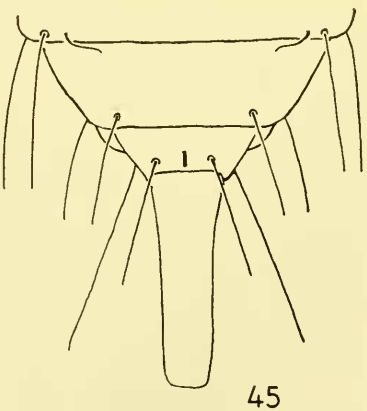
Type material and locality. Holotype male; Magnetic Island, North Queensland (A. M. Lea), (Moulton no. 3462).

Treherniella niger Moulton, new species.
(Figures 44, 45.)

Holotype female. Color black, with only tips of fore tibiae and tarsi lighter, third antennal segment with a light spot at extreme base; wings darkened at base, washed with brown; setae on prothorax blackish brown, those on terminal abdominal segments brown.

Head slightly longer than wide, cheeks arched, narrowed neck-like at base of head; postoculars moderately long, with blunt tips, placed far back from eyes and distinctly dark colored; genal setae short, stout, set on small warts; eyes large, oval, somewhat protruding in front, shorter on ventral surface; antennae





Figures 44, 45. *Treherniella niger*, new species, holotype female. Figure 44, head and prothorax; figure 45, end of abdomen (terminal hairs omitted).

normal for the genus, segment 3 with three sensecones; mouthcone broadly rounded, extending over 0.6 the length of prosternum.

Prothorax transverse, its setae with blunt tips; fore legs enlarged, fore tarsus with tooth, middle and hind legs slender; pterothorax strong, abdomen heavy; tube 0.9 times as long as head with almost parallel sides but slightly reduced at apical end; wings not constricted in the middle, rather they are broader at base and reduced in apical half to a roundly pointed tip; fore pair with 42 double fringes; terminal setae as long as tube.

ALLOTYPE MALE. Similar to female but with a stronger fore femur and a longer tarsal tooth.

TYPE MATERIAL AND LOCALITY. Holotype female, allotype male, and three female and two male paratypes, Mittagong, New South Wales (A. M. Lea), (Moulton no. 3089).

REMARKS. This species is distinctive and separated from other members of the genus by the shape of the wings, the long series of double fringes on forewings and by the long stout tube.